

WHAT IS CLAIMED IS:

1. A method for dry detection/quantification of targeted nucleotide chains, comprising the steps of:

5 (1) realizing a state in which a hybrid (C) of a certain amount of a targeted nucleotide chain (A), which is derived from a sample solution and subjected to detection or quantification, and a probe nucleotide chain (B), which has a base sequence complementary to a specific site of the base sequence of said targeted
10 nucleotide chain, is formed on a solid-phase substrate by mutually reacting the two types of nucleotide chains with each other, and in which there exists a fluorescence dye (D), which acts on said hybrid (C), thereby emits fluorescence or increases its
15 fluorescence intensity, and is capable of continuing to emit fluorescence even in the dried state while acting on said hybrid;

(2) drying said hybrid (C) and said fluorescence dye (D) on said substrate; and

20 (3) measuring the fluorescence emitted from said fluorescence dye (D), as measuring means, after the drying operation.

2. The method according to Claim 1, wherein, in
25 said step (1), both of the formation (1-1) of said hybrid (C) and the action (1-2) of said fluorescence dye (D) on said hybrid (C) are carried out in state

09764050-071304

where they are dissolved in said sample solution.

3. The method according to Claim 1, wherein, in
said step (1), both of the formation (1-1) of said
5 hybrid (C) and the action (1-2) of said fluorescence
dye (D) on said hybrid (C) are carried out in state
where they are fixed on said substrate.

4. The method according to Claim 3, further
10 comprising a step (1-0) of fixing said probe nucleotide
chain (B) on the surface of said substrate before
allowing the same to act on said targeted nucleotide
chain (A).

5. The method according to Claim 3, further
15 comprising a step (1-0') of fixing said targeted
nucleotide chain (A) on the surface of said substrate
before allowing the same to act on said probe
nucleotide chain (B).

20

6. The method according to Claim 3, further
comprising a step (1-1') of removing the nucleotide
chain other than said hybrid (C) in the solution by
washing operation after the formation (1-1) of said
25 hybrid (C) and before the action (1-2) of said
fluorescence dye (D) on said hybrid (C) in said step
(1).

09764050 071301
TOE720 05049260

7. The method according to Claim 3, further comprising a step (1-3) of removing said fluorescence dye (D) not having acted on said hybrid (C) by washing operation after the action (1-2) of said fluorescence dye (D) on said hybrid (C) in said step (1).

8. The method according to Claim 3, further comprising a step (1-4) of removing the solvent including said hybrid (C) and said fluorescence dye (D) having acted on said hybrid (C) by gas flow between said steps (1) and (2).

9. The method according to Claim 1, wherein said solid-phase substrate is a glass substrate.

10. The method according to Claim 1, wherein said solid-phase substrate is a resin substrate.

11. The method according to Claim 1, wherein said targeted nucleotide chain (A) is a single-stranded nucleotide chain.

12. The method according to Claim 1, wherein said targeted nucleotide chain (A) is DNA.

13. The method according to Claim 1, wherein said targeted nucleotide chain (A) is RNA.

14. The method according to Claim 13, wherein said targeted nucleotide chain (A) is mRNA.

15. The method according to Claim 1, wherein said
5 fluorescence dye (D) is an intercalator which enters the space between the two base pairs of the double-stranded nucleotide chain.

16. The method according to Claim 1, wherein said
10 fluorescence dye (D) is a groove binding type dye which enters the groove of the double-stranded nucleotide chain.

17. The method according to Claim 15, wherein
15 said fluorescence dye (D) is 2-methyl-4,6-bis(4-N,N-dimethylaminophenyl) pyrylium salt.

18. The method according to Claim 15, wherein
20 said fluorescence dye (D) is ethidium bromide.

19. The method according to Claim 16, wherein said fluorescence dye (D) is YOYO1.

20. A method for dry detection/quantification of
25 multi-stranded nucleotide chains, comprising the steps of:

(1) adding to a sample solution, which is

09764050 071301

subjected to detection/quantification of a multi-stranded nucleotide chain, a fluorescence dye having a fluorescence characteristic of emitting fluorescence or increasing its fluorescence intensity in the presence of a multi-stranded nucleotide chain and capable of maintaining the fluorescence characteristic even in the dried state;

(2) placing a known amount of said sample solution with said fluorescence dye added thereto on a clean observation substrate so as to dry the same; and

(3) measuring the fluorescence emitted from the dried sample and detecting/quantifying said multi-stranded nucleotide chain in said sample solution based on the obtained measured values.

21. The method according to Claim 20, wherein said multi-stranded nucleotide chain is any one of double-stranded nucleotide chain, triple-stranded nucleotide chain and quadruple-stranded nucleotide chain.

22. The method according to Claim 20, wherein said fluorescence dye is an intercalator which enters the space between the two base pairs of said double-stranded nucleotide chain.

23. The method according to Claim 20, wherein

said fluorescence dye is a groove binding type dye which enters the groove of said double-stranded nucleotide chain.

5 24. The method according to Claim 22, wherein said fluorescence dye is 2-methyl-4,6-bis(4-N,N-dimethylaminophenyl) pyrylium salt.

10 25. The method according to Claim 22, wherein said fluorescence dye is ethidium bromide.

 26. The method according to Claim 23, wherein said fluorescence dye is YOYO1.

09764050-071301
T03T20-05049260